

In the Claims:

Please cancel claim 1 without prejudice and add new claims
65-130 as follows:

1.-64. (Cancelled)

65. (New) A method for determining which of a plurality of programs has been selected to be received by a monitored receiver at a monitored site, the method comprising:

 determining a test signal corresponding to the selected program from an output of the monitored receiver;

 extracting a set of reference portions at the monitored site corresponding respectively to a set of reference programs, wherein the set of reference programs corresponds to at least a subset of the plurality of programs; and

 comparing the test signal and the set of reference portions in a substantially parallel manner.

66. (New) A method as defined in claim 65 wherein the plurality of programs is transmitted with a respective plurality of embedded identification codes to enable each of the plurality of programs to be received by the monitored receiver, and further comprising identifying the selected program based on an embedded identification code in the plurality of embedded identification codes corresponding to a reference program in the set of reference programs if the test signal matches a reference portion in the set of reference portions corresponding to the reference program.

67. (New) A method as defined in claim 66 wherein identifying the selected program comprises storing the embedded identification code with a time stamp.

68. (New) A method as defined in claim 65 wherein the test signal corresponds to a test audio signal.

69. (New) A method as defined in claim 68 wherein the test audio signal is determined by way of a non-invasive sensor positioned proximate to the output of the monitored receiver.

70. (New) A method as defined in claim 65 wherein the set of reference portions corresponds to a set of reference audio portions.

71. (New) A method as defined in claim 65 wherein each program in the plurality of programs is transmitted as a sequence of data packets in a corresponding channel of a set of channels, and wherein extracting the set of reference portions corresponding respectively to the set of reference programs comprises scanning the set of channels to receive a reference channel used to transmit the set of reference programs.

72. (New) A method as defined in claim 71 wherein scanning the set of channels is based on historical tuning of the monitored receiver.

73. (New) A method as defined in claim 71 wherein scanning the set of channels is based on a list of at least one of stations, channels or programs.

74. (New) A method as defined in claim 71 wherein scanning the set of channels is based on intercepting a signal from a remote control device.

75. (New) A method as defined in claim 71 wherein scanning the set of channels is based on forecasts of likelihood of tuning choices.

76. (New) A method as defined in claim 65 wherein the test signal corresponds to a test audio signal, and wherein comparing the test signal and the set of reference portions comprises digitizing at least a portion of the test audio signal.

77. (New) A method as defined in claim 65 wherein the test signal corresponds to a test audio signal and the set of reference portions correspond to a set of reference audio portions, and wherein comparing the test signal and the set of reference portions comprises comparing the test audio signal with a reference audio portion in the set of reference audio portion to produce a same output when the test audio signal and the reference audio portion substantially match, a different output when the test audio signal and the reference audio portion do not substantially match, a noise output when at least one of the test audio signal or the reference audio portion is substantially noisy, and a silent output when at least one of the test audio signal or the reference audio portion is substantially silent.

78. (New) A method as defined in claim 77 wherein comparing the test audio signal and the reference audio portion comprises counting silent and noisy blocks of at least one of the test audio signal and the reference audio portion.

79. (New) A method as defined in claim 77 wherein comparing the test audio signal and the reference audio portion comprises transitioning between a search state, a verification state, a wait-to-see state, and an audio-off state.

80. (New) A method as defined in claim 65 wherein the plurality of programs are provided by at least one of a digital broadcast source or a digital playback device.

81. (New) A method as defined in claim 66 wherein the embedded identification code conforms to at least one of a digital video broadcast standard or an Advanced Television System Committee (ATSC) digital broadcast standard.

82. (New) A method for identifying a program from a plurality of receivable programs that has been selected for reception by a digital broadcast receiver at a monitored site, the method comprising:

comparing the selected program and a set of reference programs from the plurality of receivable programs in a substantially parallel manner at the monitored site;

determining program identification information corresponding to a reference program in the set of the reference programs, wherein the program identification information is provided with the reference program to enable reception of the reference program by the digital broadcast receiver; and

associating the selected program with the program identification information if the reference program matches the selected program.

83. (New) A method as defined in claim 82 wherein the selected program is a broadcast television program or a broadcast radio program.

84. (New) A method as defined in claim 82 wherein each receivable program in the plurality of receivable programs is transmitted as a sequence of data packets in a predetermined channel of a set of channels, wherein the sequence of data packets includes audio information, and wherein comparing the selected program and the set of reference programs comprises generating a set of reference audio portions corresponding respectively to the set of reference programs by:

scanning to the predetermined channel corresponding to the set of reference programs;

demodulating a set of data packets that includes at least a portion of each sequence of data packets corresponding respectively to each of the set of reference programs included in the predetermined channel; and

generating a set of reference audio portions corresponding respectively to the set of reference programs included in the predetermined channel based on the audio information included in the set of data packets.

85. (New) A method as defined in claim 82 wherein comparing the selected program and the set of reference programs comprises:

detecting a test audio signal corresponding to the selected program; generating a set of reference audio portions corresponding respectively to the set of reference programs; and

comparing the test audio signal and the set of reference audio portions in a substantially parallel manner.

86. (New) A method as defined in claim 85 wherein comparing the test audio signal and the set of reference audio portions comprises comparing the test audio signal with a reference audio portion in the set of reference audio portions to produce a same output when the test audio signal and the reference audio portion substantially match, a different output when the test audio signal and the reference audio portion do not substantially match, a noise output when at least one of the test audio signal or the reference audio portion is substantially noisy, and a silent output when at least one of the test audio signal or the reference audio portion is substantially silent.

87. (New) A method as defined in claim 86 wherein comparing the test audio signal and the reference audio portion comprises counting silent and noisy blocks of at least one of the test audio signal and the reference audio portion.

88. (New) A method as defined in claim 86 wherein comparing the test audio signal and the reference audio portion comprises transitioning between a search state, a verification state, a wait-to-see state, and an audio-off state.

89. (New) A method as defined in claim 82 wherein the program identification information conforms to at least one of a digital video broadcast standard or an Advanced Television System Committee (ATSC) digital broadcast standard.

90. (New) A method as defined in claim 82 wherein the plurality of receivable programs are provided by at least one of a digital broadcast source or a digital playback device.

91. (New) A method for comparing a selected program received by a monitored receiver to a set of reference programs, the method comprising:

determining a test audio feature set corresponding to the selected program;

determining a reference audio feature set corresponding to a reference program in the set of reference programs;

producing a same output, a different output, a noise output or a silent output based on the test audio feature set and the reference audio feature set; and

transitioning to a search state, a verification state, a wait state or an off state in response to the same output, the different output, the noise output or the silent output.

92. (New) A method as defined in claim 91 wherein the silent output comprises at least one of a silent test output or a silent reference and test output.

93. (New) A method as defined in claim 91 producing the same output, the different output, the noise output or the silent output comprises:

producing the same output when the test audio feature set and the reference audio feature set substantially match;

producing the different output when the test audio feature set and the reference audio feature set do not substantially match;

producing the noise output when at least one of the test audio feature set or the reference audio feature set is substantially noisy; and

producing the silent output when at least one of the test audio feature set or the reference audio feature set is substantially silent.

94. (New) A method as defined in claim 93 wherein producing the silent output comprises:

producing a silent test output if only the test audio feature set is substantially silent; and

producing a silent reference and test output if both the test audio feature set and the reference audio feature set are substantially silent.

95. (New) A method as defined in claim 91 wherein transitioning to the search state, the verification state, the wait state or the off state comprises transitioning to the search state in response to an occurrence of the different output.

96. (New) A method as defined in claim 91 wherein transitioning to the search state, the verification state, the wait state or the off state comprises transitioning to the verification state in response to an occurrence of the same output.

97. (New) A method as defined in claim 91 wherein transitioning to the search state, the verification state, the wait state or the off state comprises transitioning to the wait state in response to an occurrence of the noise output or the silent output.

98. (New) A method as defined in claim 91 wherein transitioning to the search state, the verification state, the wait state or the off state comprises transitioning to the off state in response to an occurrence of the silent output.

99. (New) A method as defined in claim 91 further comprising:
counting a number of occurrences of the noise output; and
counting a number of occurrences of the silent output.

100. (New) A method as defined in claim 99 further comprising comparing a noise count to a first threshold or a second threshold, and comparing a silent count to a third threshold or a fourth threshold.

101. (New) A method as defined in claim 100 wherein the second threshold is greater than the first threshold and the fourth threshold is greater than the third threshold.

102. (New) A method as defined in claim 100 wherein transitioning to the search state, the verification state, the wait state or the off state comprises transitioning from the search state to the wait state in response to an occurrence of the noise output, and further comprising comparing the noise count to the first threshold while in the wait state.

103. (New) A method as defined in claim 100 wherein transitioning to the search state, the verification state, the wait state or the off state comprises transitioning from the verification state to the wait state in response to an occurrence of the noise output, and further comprising comparing the noise count to the second threshold while in the wait state.

104. (New) A method as defined in claim 100 wherein transitioning to the search state, the verification state, the wait state or the off state comprises transitioning from the search state to the wait state in response to an occurrence of the silent output, and further comprising comparing the silent count to the third threshold while in the wait state.

105. (New) A method as defined in claim 100 wherein transitioning to the search state, the verification state, the wait state or the off state comprises transitioning from the verification state to the wait state in response to an occurrence of the silent output, and further comprising comparing the silent count to the fourth threshold while in the wait state.

106. (New) A method as defined in claim 91 further comprising reporting program identification information included in the reference program in response to an occurrence of the same output.

107. (New) A method as defined in claim 91 further comprising reporting an indication that a previously identified program is no longer the selected program in response to an occurrence of the difference output, a first number of occurrences of the noise output, or a second number of occurrences of the silent output.

108. (New) An apparatus to identify a program selected for reception by a monitored receiver, wherein the selected program comprises one of a plurality of receivable programs broadcast in a plurality of channels, wherein each of the plurality of receivable programs is distributed as a sequence of data packets, wherein each of the sequence of data packets includes a respective program identifying code to allow reception by the monitored receiver of a particular sequence of data packets corresponding to a particular one of the plurality of receivable programs, the apparatus comprising:

a tuner and demodulator configured to receive a plurality of reference programs corresponding to at least a subset of the plurality of receivable programs;

a first feature extractor configured to determine a first set of characteristic features corresponding to the selected program;

a second feature extractor configured to determine a plurality of second sets of characteristic features, wherein each second set of characteristic features corresponds to a respective one of the plurality of reference programs; and

a comparator configured to compare the first set of characteristic features and the plurality of second sets of characteristic features in a substantially parallel manner to determine whether the first set of characteristic features matches one of the plurality of second sets of characteristic features.

109. (New) An apparatus as defined in claim 108 further comprising a microphone positioned to acquire an audio output of the monitored receiver.

110. (New) An apparatus as defined in claim 108 further comprising a coupling to an audio output connector of the monitored receiver, wherein the coupling is configured to acquire an audio output of the monitored receiver.

111. (New) An apparatus as defined in claim 108 further comprising a receiver ON/OFF processor to determine whether the monitored receiver is in an ON state or an OFF state.

112. (New) An apparatus as defined in claim 108 further comprising a remote control signal detector to detect a signal transmitted from a remote control device to the monitored receiver.

113. (New) An apparatus as defined in claim 108 further comprising an output coupling to a store-and-forward device.

114. (New) An apparatus as defined in claim 108 wherein the tuner and demodulator includes a scanning tuner configured to scan through the plurality of channels and to provide a set of reference programs transmitted in one of the plurality of channels to the second feature extractor.

115. (New) An apparatus as defined in claim 114 wherein the scanning tuner is arranged to scan through the plurality of receivable programs based on historical tuning of the monitored receiver.

116. (New) An apparatus as defined in claim 114 wherein the scanning tuner is arranged to scan through the plurality of receivable programs based on a list of at least one of stations, channels or programs.

117. (New) An apparatus as defined in claim 114 wherein the scanning tuner is arranged to scan through the plurality of receivable programs based on a signal received from a remote control device.

118. (New) An apparatus as defined in claim 114 wherein the scanning tuner is arranged to scan through the plurality of receivable programs based on likelihoods of tuning choices.

119. (New) An apparatus as defined in claim 108 further comprising a code extractor configured to extract at least one reference program identifying code from the plurality of reference programs.

120. (New) An apparatus as defined in claim 119 further comprising a memory configured to store the at least one reference program identifying code as a time-stamped record.

121. (New) An apparatus as defined in claim 119 wherein the code extractor is configured to extract the at least one reference program identifying code only if the first set of characteristic features matches one of the plurality of second sets of characteristic features.

122. (New) An apparatus as defined in claim 108 wherein the comparator is configured to produce a same output when the first set of characteristic features substantially matches one of the second sets of characteristic features in the plurality of second sets of characteristic features, wherein the comparator is configured to produce a different output when the first set of characteristic features does not substantially match one of the second sets of characteristic features in the plurality of second sets of characteristic features, wherein the comparator is configured to produce a noise output when the first set of characteristic features or any of the second sets of characteristic features in the plurality of second sets of characteristic features is substantially noisy, and wherein the comparator is configured to produce a silent output when the first set of characteristic features or any of the second sets of characteristic features in the plurality of second sets of characteristic features is substantially silent.

123. (New) An apparatus as defined in claim 122 further comprising silent and noisy block counters.

124. (New) An apparatus as defined in claim 122 wherein the comparator transitions between search, verification, wait-to-see, and audio-off states.

125. (New) A system to identify a program selected from a plurality of receivable programs for reception by a digital broadcast receiver comprising:

 a test input processor to generate a first feature set corresponding to the selected program;

 a reference input processor to generate a plurality of second feature sets corresponding respectively to a plurality of reference programs;

 a comparator to compare the first feature set and the plurality of second feature sets in a substantially parallel manner;

 a program information extractor configured to extract program identification information corresponding to at least one reference program in the plurality of reference programs, wherein the program identification information is provided with the at least one reference program to enable reception of the at least one reference program by the digital broadcast receiver; and

 a store-and-forward device to store the program identification information and transmit the program identification information to a central office.

126. (New) A system as defined in claim 125 wherein the plurality of receivable programs are transmitted in a plurality of channels, and wherein the reference input processor is further configured to scan through the plurality of channels to receive the plurality of reference programs.

127. (New) A system as defined in claim 125 wherein the plurality of receivable programs is provided by a plurality of reference inputs, and wherein the reference input processor is further configured to select one of the plurality of reference inputs to process the plurality of reference programs.

128. (New) A system as defined in claim 127 wherein the plurality of reference inputs are provided by at least one of a digital broadcast source or a digital playback device.

129. (New) A system as defined in claim 125 wherein the program identification information conforms to at least one of a digital video broadcast standard or an Advanced Television System Committee (ATSC) digital broadcast standard.

130. (New) A system as defined in claim 125 wherein the program information extractor is configured to extract program identification information corresponding to the at least one receivable program only if the comparator determines that the first feature set and one of the plurality of second feature sets match.